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EPODOC, WPI, JAPIO

(54) Abstract Title
**Ground surface access assembly with repositionable hinges**

(57) A ground surface access assembly 10 includes a frame member 12 and a cover member 14. There is a pair of projections (32, fig7) on the cover member 14 and two pairs of seats (24A-D, fig 3) on the frame member. The pins (32) are secured to one pair of seats (24A-B, or 24C-D) by means of a "dog-leg" clamping member (36, fig 6), such that the cover 14 can rotate relative to the frame 12. The cover 14 may therefore be pivotally mounted to the frame 12 in such a way as to open either clockwise or anticlockwise.

Alternatively, the frame 12 may have two pairs of projections (32) while the cover 14 has a pair of seats.

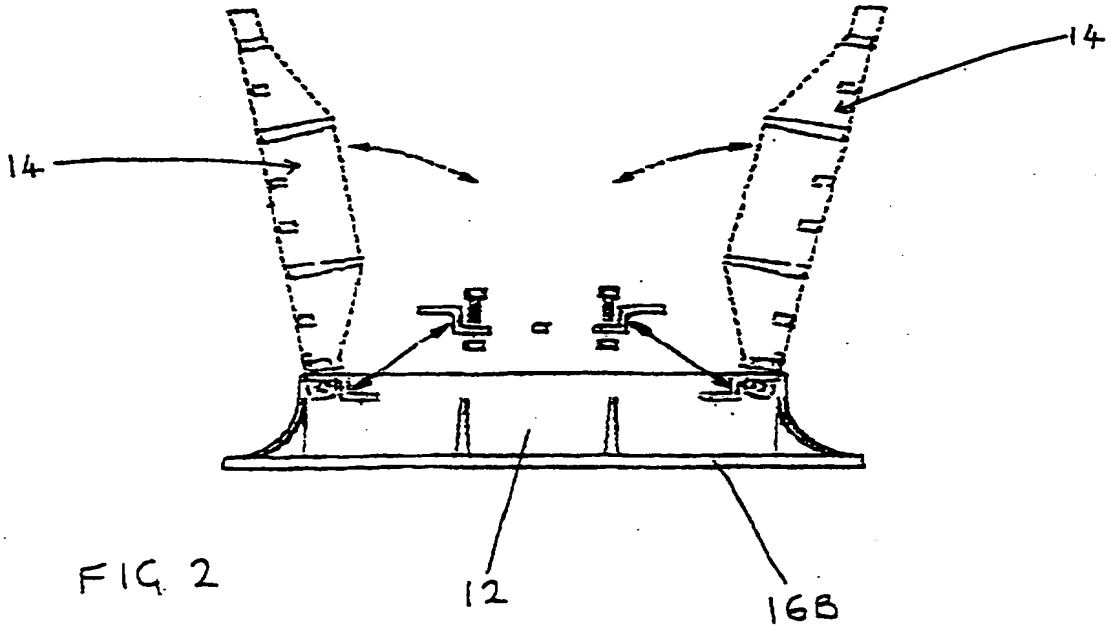


FIG. 2

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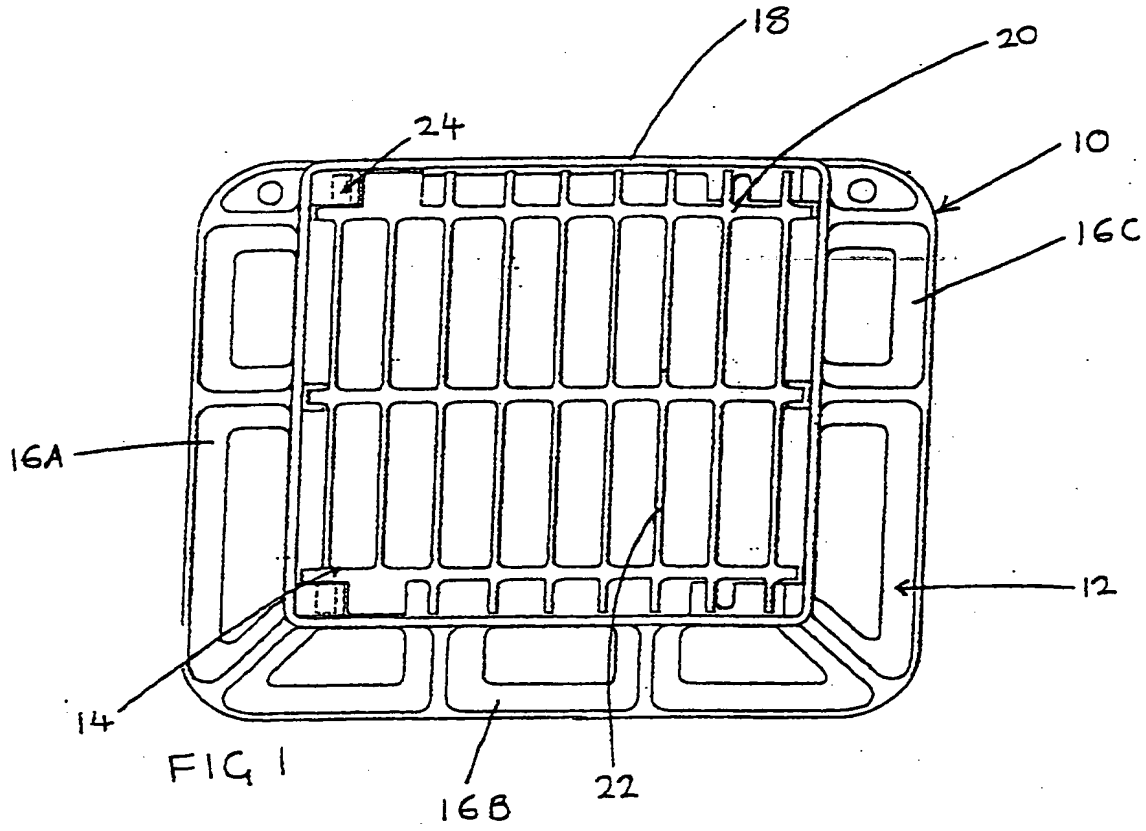


FIG 1

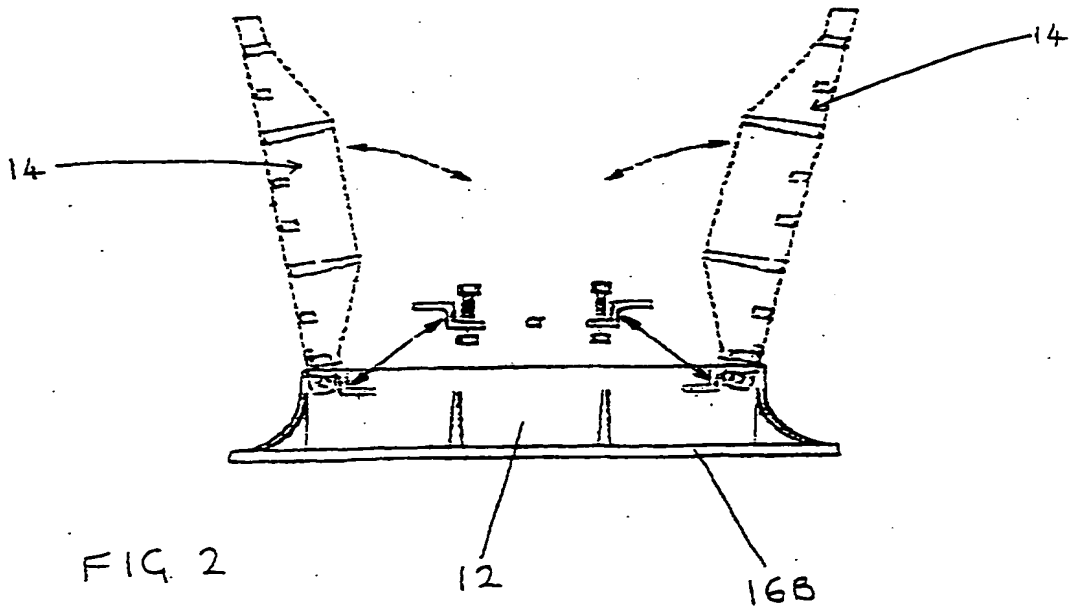


FIG 2

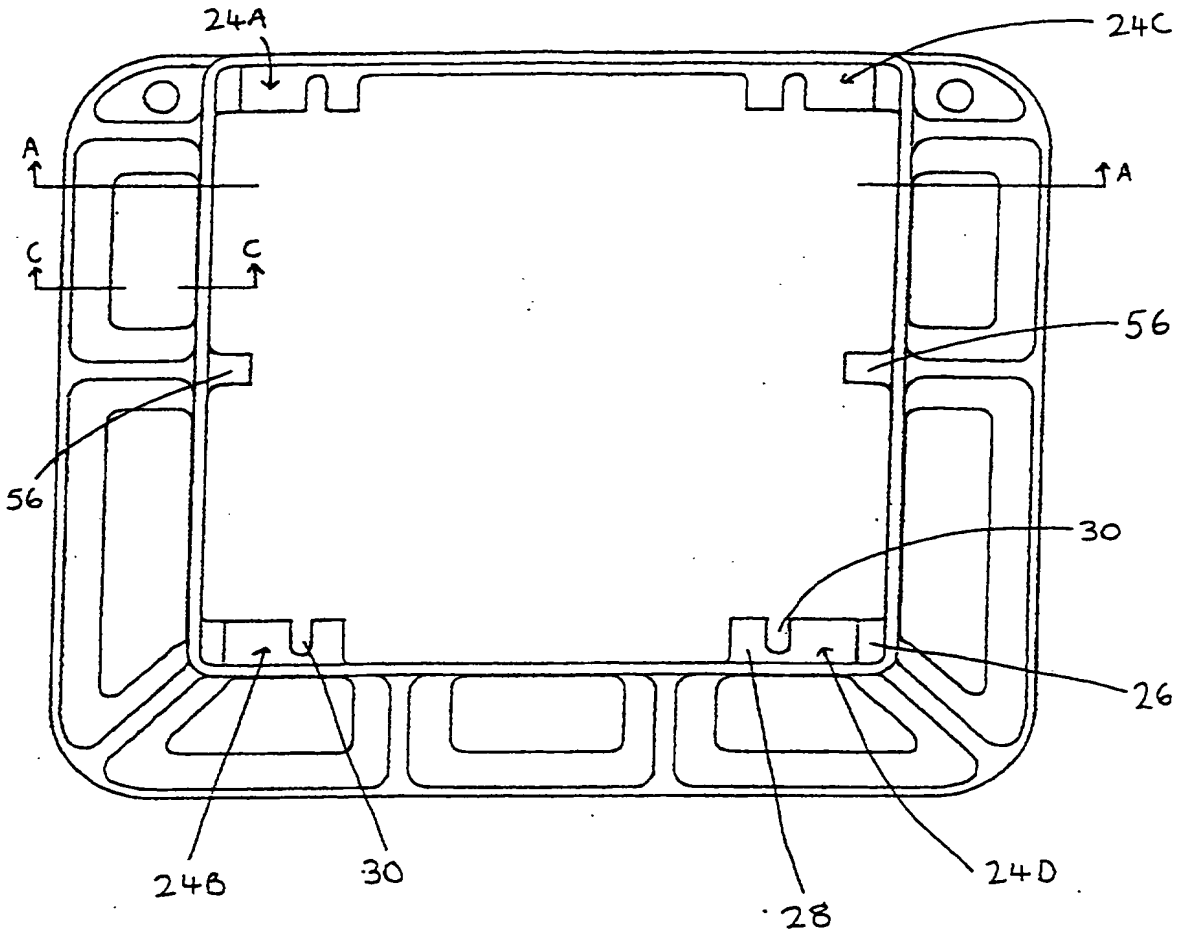


FIG 3

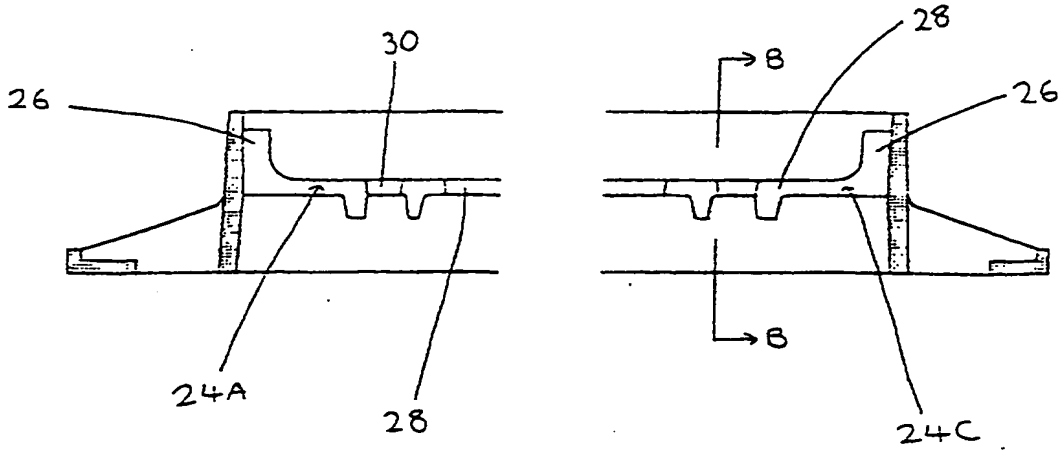


FIG 4

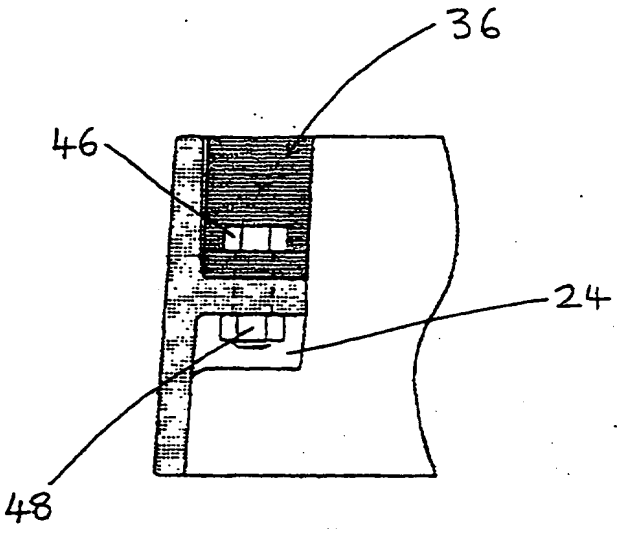


FIG 5

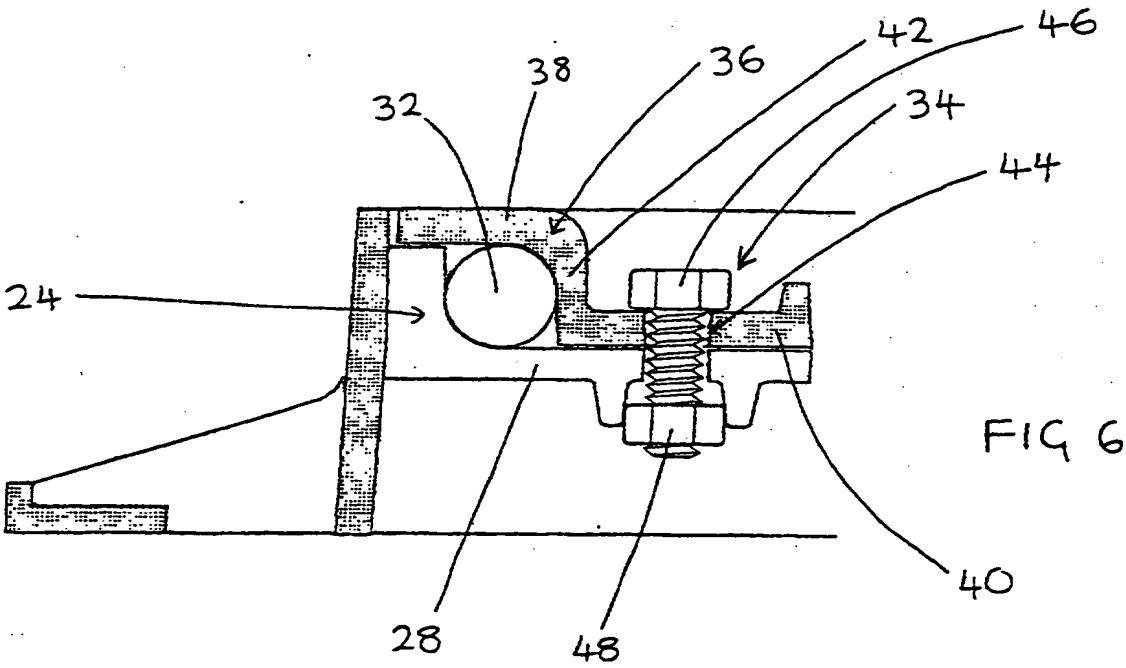


FIG 6

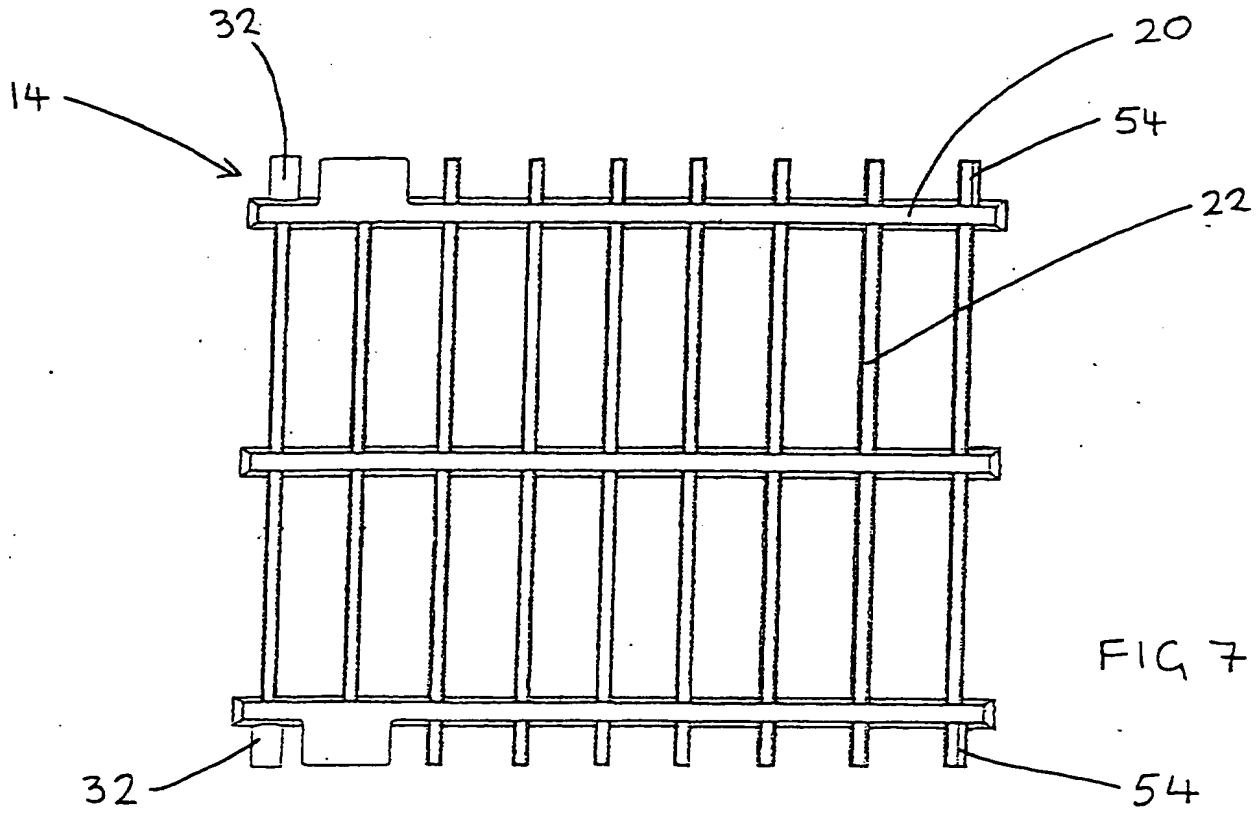


FIG 7

# Ground Surface Access Assemblies

The invention relates to ground surface access assemblies such as gully gratings and manhole assemblies. Such assemblies allow access to sewers, water hydrants and other below surface installations, via openings in the roads, pavements, etc. above. In particular, the invention relates to gully gratings for use in the curb-side channels of roads.

A gully grating typically includes a generally rectangular frame and a cover member hinged to the frame so as to be rotatable between open and closed positions. The frame generally includes three flanged sides and a non-flanged side for locating adjacent to the curb.

When the gully grating is provided in a road, the hinged attachment is preferably located on the upstream side of the gully grating. This ensures that, if the grating is hit by a vehicle with the cover member in its open position, the force of the impact will tend to close the cover member rather than seriously damaging the vehicle and/or the gully grating.

Conventionally, gully gratings are designed such that they hinge correctly for the normal prevailing traffic flow. However, it is necessary to provide alternatively hinged gully gratings for use in one-way streets or dual carriageways.

It is known to provide gully gratings wherein the position of the hinged attachment may be altered depending upon the use to which the grating is to be put. However, the known designs have proved relatively complex to set up and to maintain.

According to the invention, there is provided an access assembly including a frame member and a cover member, wherein a pair of projections is provided on cover member, two pairs of seats are provided on the frame member and releasable retaining means are provided for retaining the

projections on either one of the pairs of seats such that the projections may rotate relative to the seats, thereby pivotally attaching the cover member to the frame member.

Preferably the frame member is generally rectangular and includes three flanged sides and one non-flanged side. The flanged sides preferably have a width of at least 50mm, and most preferably at least 75mm, in the general plane of the frame member. Preferably the non-flanged side has a width of under 40mm in the general plane of the frame member.

Preferably the cover member is also generally rectangular and fits generally within the frame member in a closed position. Preferably the projections are located near one side of the cover member, opposite one another and projecting away from one another. The projections may be substantially cylindrical and may have a radius of between 5mm and 15mm and a length of between 10mm and 50mm.

Preferably the frame member includes a seat near each of its four corners. Preferably the pairs of seats are provided at respectively opposite sides of the cover member. Preferably one seat of each pair is located adjacent to the non-flanged side of the frame member and the other seat in the pair is remote from the non-flanged side of the frame member.

Preferably the releasable retaining means includes a retaining member and means for releasably attaching the retaining member to the seat and thereby retaining the projection therebetween. The retaining member may have dog-leg profile, for accommodating the projection. The attachment means preferably includes threaded fastening means such as a nut and bolt.

Preferably the cover member may pivot between an open position and a closed position in which it lies generally within and in the same plane and the frame member. In the closed position, the cover member is preferably supported by the seats provided on the frame member. Preferably, when the

frame member is under significant load, it is also supported by supplementary supports provided between the seats. The supplementary supports may be provided on opposite flanged sides of the cover member, approximately half-way between two seats. The supplementary supports preferably project inwardly from the frame member.

At the points of support of the cover member on the frame member, a resilient material may be provided on at least one of the load surfaces.

According to the invention there is also provided a frame member for an access assembly as previously defined, the frame member including two pairs of seats for receiving a pair of projections on a cover member.

According to the invention, there is further provided an access assembly including a frame member and a cover member, wherein a pair of seats is provided on the cover member, two pairs of projections are provided on the frame member and releasable retaining means are provided for retaining the projections on or in either one of the pairs of seats such that the projections may rotate relative to the seats, thereby pivotally attaching the cover member to the frame member.

According to the invention, there is also provided a cover member for an access assembly as previously defined, the cover member including a pair of projections receivable on either of a pair of seats on a frame member.

An embodiment of the invention will be described for the purpose of illustration only with reference to the accompanying drawings in which:-

Fig. 1 is a plan view of a gully grating assembly according to the invention;

Fig. 2 is a front view of the gully grating assembly of Fig. 1, illustrating the cover member located in each of two alternative positions;

Fig. 3 is a plan view of a frame member of a gully grating assembly according to the invention.

Fig. 4 is a section on the line A-A of Fig. 1;

Fig. 5 is a section on the line B-B of Fig. 4;

Fig. 6 is a section on the line C-C of Fig. 3; and

Fig. 7 is a plan view of a cover member of the gully grating assembly of Figs. 3 to 6.

Referring to the drawings, a gully grating assembly 10 includes a frame member 12 and a cover member 14. The frame member 12 is generally rectangular and includes three flanged sides 16A, 16B and 16C and a non-flanged side 18. The flanges add stability and strength to the frame member, and allow it to be mounted in place in a road, while the non-flanged side is located in use adjacent to a curb. This allows the gully grating assembly to be positioned in the gutter area, generally out of the flow of traffic.

The cover member 14 includes a grid of main beams 20 and cross members 22. The cover member 14 is pivotally attached to the frame member in a manner described in more detail hereinafter such that it may be moved between open and closed positions. In the closed position, as shown in Fig. 1, the cover member 14 is located generally within the frame member 12, closing the gully grating assembly. The main beams 20 are in this position supported by the frame member as described in more detail below. The cover member 14 may be pivoted to an open position, two alternative such positions being illustrated in Fig. 2, wherein access through the gully grating assembly 10 is permitted.

Because the non-flanged side 18 of the frame member is located in the curb, it is normally desirable that the cover member 14 be hinged to the frame member 12 at the flanged side 16A, such that normal traffic flow meets the

hinged side of the cover member first. However, in one-way streets or dual carriageways for instance, this situation is reversed. It is thus desirable that the cover member 14 is pivotally attachable to the frame member 12 at either of the sides 16A or 16C, so as to be pivotable in either of the two alternative ways shown in Fig. 2. This is made possible using an arrangement according to the invention.

Referring in particular to Figs. 4 to 6, the frame member 12 is provided with four seat members 24A to 24D, one being located at each of its four corners (see Fig. 3). Each seat member is generally L-shaped in section, including side and base portions 26 and 28 respectively (see Figs. 4 to 6). The base portion 28 of each seat member 24 is provided with a generally U-shaped cut-away portion 30.

Referring to Fig. 7, the cover member 14 includes two hinge lugs 32 projecting from its external main beams 20. The hinge lugs 32 are generally cylindrical in shape. As shown in Fig. 6, the hinge lugs 32 may be received on the seat members 24 of the frame member 12. The hinge lugs 32 are held in place on the seat members 24 by a clamping assembly 34. The clamping assembly includes a clamp member 36, which is of a dog-leg shape, having upper and lower generally planar portions 38 and 40 joined by an upright portion 42. The lower planar portion 40 includes a generally circular hole 44. A bolt 46 may be inserted from the upperside of the clamping assembly 34 through the circular hole 44 in the clamping member 36 and the cut-away portion 30 of the seat member 24 and fastened in place by a nut 48. A recess defined by an annular projection in the underside of the seat member 24 receives the nut 48.

Once the hinge lugs 32 of the cover member 14 are clamped in place as shown in Figs. 5 and 6, the hinge lugs 32 are able to rotate relative to the seat members 24, thus allowing the frame member 12 to pivot relative to the cover member 14. The hinge lugs 32 may be pivotally attached in place on either of the pairs of seat members 24A and 24B or 24C and 24D (see Fig. 3). This allows the cover member 14 to pivot correctly for either direction of prevailing traffic

flow.

If the cover member 14 is pivotally attached at the seat members 24A and 24B, the seat members 24C and 24D function as supports for the cover member 14 at its opposite side when the cover member 14 is in its closed position. Projections 54 at that opposite side of the cover member 14 engage the seat members 24C and 24D and thereby support the cover member 14. Thus the cover member 14 is supported at four corners.

When a significant load is applied to the cover member 14 in its closed position, for example if a vehicle travels over the gully grating assembly, the cover member 14 depresses slightly and contacts further supplementary support members 56 provided on the frame member 12 (see Fig. 3).

There is thus provided a gully grate assembly in which the cover member 14 may be attached to the frame member 12 at either of its sides. The method of attachment is straightforward and may be effected using conventional, readily available tools. Once attached, the frame member 12 may easily be detached from the cover member 14, again using conventional tools.

Various modifications may be made to the above described embodiment without departing from the scope of the invention.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

## CLAIMS

1. An access assembly including a frame member and a cover member, wherein a pair of projections is provided on cover member, two pairs of seats are provided on the frame member and releasable retaining means are provided for retaining the projections on either one of the pairs of seats such that the projections may rotate relative to the seats, thereby pivotally attaching the cover member to the frame member.

2. An access assembly according to claim 1, wherein the frame member is generally rectangular and includes three flanged sides and one non-flanged side.

3. An access assembly according to claim 2, wherein the flanged sides have a width of at least 50mm, in the general plane of the frame member.

4. An access assembly according to claim 3, wherein the flanged sides have a width of at least 75mm in the general plane of the frame member.

5. An access assembly according to any of claims 2 to 4, wherein the non-flanged side has a width of under 40mm in the general plane of the frame member.

6. An access assembly according to any of claims 2 to 5, wherein the cover member is also generally rectangular and fits generally within the frame member in a closed position.

7. An access assembly according to claim 6, wherein the projections are located near one side of the cover member, opposite one another and projecting away from one another.

8. An access assembly according to any of claims 2 to 7, wherein the projections are substantially cylindrical.

9. An access assembly according to claim 8, wherein the projections have a radius of between 5mm and 15mm and a length of between 10mm and 50mm.

10. An access assembly according to any of claims 2 to 9, wherein the frame member includes a seat near each of its four corners.

11. An access assembly according to claim 10, wherein the pairs of seats are provided at respectively opposite sides of the cover member.

12. An access assembly according to claim 10 or claim 11, wherein one seat of each pair is located adjacent to the non-flanged side of the frame member and the other seat in the pair is remote from the non-flanged side of the frame member.

13. An access assembly according to any of the preceding claims, wherein the releasable retaining means includes a retaining member and means for releasably attaching the retaining member to the seat and thereby retaining the projection therebetween.

14. An access assembly according to claim 13, wherein the retaining member has a dog-leg profile, for accommodating the projection.

15. An access assembly according to claim 13 or claim 14, wherein the attachment means includes threaded fastening means such as a nut and bolt.

16. An access assembly according to any of the preceding claims, wherein the cover member pivots between an open position and a closed position, in which it lies generally within and in the same plane as the frame member.

17. An access assembly according to claim 16, wherein in the closed position, the cover member is supported by the seats provided on the frame member.

18. An access assembly according to claim 17, wherein when the frame member is under significant load, it is also supported by supplementary

supports provided between the seats.

19. An access assembly according to claim 18, wherein the supplementary supports are provided on opposite flanged sides of the cover member, approximately half-way between two seats.

20. An access assembly according to claim 18 or claim 19, wherein the supplementary supports project inwardly from the frame member.

21. An access assembly according to any of claims 17 to 20, wherein at the points of support of the cover member on the frame member, a resilient material is provided on at least one of the load surfaces.

22. A frame member for an access assembly according to any preceding claim, the frame member including two pairs of seats for receiving a pair of projections on a cover member.

23. An access assembly including a frame member and a cover member, wherein a pair of seats is provided on the cover member, two pairs of projections are provided on the frame member and releasable retaining means are provided for retaining the projections on or in either one of the pairs of seats such that the projections may rotate relative to the seats, thereby pivotal attaching the cover member to the frame member.

24. A cover member for an access assembly as previously defined, the cover member including a pair of projections receivable on either of a pair of seats on a frame member.

25. An access assembly substantially as herein described with reference to the drawings.

26. Any novel subject matter or combination including novel subject matter disclosed herein, whether or not within the scope of or relating to the same invention as any of the preceding claims.

**Application No:** GB 9923686.1
**Claims searched:** 1-23 & 25
**Examiner:** Philip Osman
**Date of search:** 3 January 2001

# Patents Act 1977
# Search Report under Section 17

## Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): E1G

Int Cl (Ed.7): E02D, E03F

Other: EPODOC, WPI, JAPIO.

## Documents considered to be relevant:

| Category | Identity of document and relevant passage | | Relevant to claims |
|---|---|---|---|
| X | GB2209783A | (GLYNWED) Whole Document | 1-23 |
| A | EP0681066A1 | (TOURTE, RAYMOND) fig 2. | |

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|---|---|---|---|
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| Y | Document indicating lack of inventive step if combined with one or more other documents of same category. | P | Document published on or after the declared priority date but before the filing date of this invention. |
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